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new liverworts from Florida, South Carolina and California, and several new exotic species. Prof. Eaton continues his notes on new or little known ferns of the United States.—Trimen's *Journal of Botany*, for May, contains A. W. Bennett's *Polygalæ Americanæ novæ vel parum cognitæ*.—Among other articles in Caruel's *New Italian Botanical Journal*, is one by F. Sestini on the action of the vapor of different substances in the seed during germination.—Three eminent botanists have recently died, Prof. G. L. Reichenbach, of Dresden, aged 86; Dr. F. M. Ascherson, at Berlin, aged 81; also Prof. Griesbach, who died at Göttingen, May 13th.

ZOÖLOGY.¹

STRANGE HABITAT OF A BARNACLE ON A GAR PIKE.—I have recently received a barnacle from Mr. Jos. Wilcox, of Philadelphia, which he obtained from the scales of a gar in Hernando county, Florida. The specimens are small; the largest measures eight millimeters in carino-rostral diameter, about seven mm. in the other, the smaller specimen seven mm. in the first, and six mm. in the other direction. As nearly as I can make out, it is very near if not identical with *Platylepas decorata* Darw., though this species seems hitherto to have been recorded as coming from the Pacific only; the Florida locality is of considerable interest, therefore, as extending the range of the species. The fish from which the specimens were obtained was found in brackish water, and therefore agreeing in the nature of its habitat with the probable conditions of the water in the Gambia river, Africa, where the *P. bissexlobata* has been found on the manatee. There are no pores in the parietes, the midribs of the compartments were well developed, and in one specimen the membranous basis was as convex as the shell, in the other not quite as convex. The basal membrane seems to be reflected up over the parietes to near the aperture and also to extend some way outwards from the attached margin of the compartments, as if to afford a more extensive attachment to the fish.

I have been unable to find any record of the occurrence of these and kindred forms on the gar, but it would be well adapted to them, as their scales would afford secure attachment.

It would be of interest to know whether the creature's shell left a depression in the scales of the fish equal to the convexity of the basal membrane. Mr. Darwin observes in regard to other barnacles which attach themselves to turtles, whales and sharks, in effect, that the growth of the shell of the parasite into the tissues of its host is due to a force similar to that which impels the root of a tree through hard compacted soil.—*John A. Ryder.*

¹The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COUES, U. S. A.

ANIMAL MUSIC (AM. NAT., April, 1879).—The song of the chickadee is given in but two notes, although the name is derived from five syllables—chick-a-dee-dee-dee. Mr. Nuttall was a close observer of the song of birds, but contented himself with noting only the syllabism. The music of birds differs in form and pitch, as in that of the Baltimore oriole or hang-nest, given by me in the AMERICAN NATURALIST (with the note of the bull-frog, Jan., 1872, p. 234), as compared with that cited by Mr. Clark (April, 1879, p. 222). Gardiner gives nine examples of the song of the English thrush in five keys (Music of Nature, pp. 59, 140, 162, 225, 344, 454), fourteen of the European blackbird in four keys (pp. 59, 76, 130, 140, 162, 434), and others equally scattered and difficult to compare.—*S. S. Haldeman.*

SHEDDING OF THE TRACHEÆ IN THE MOLTING OF INSECTS.—While dissecting out the spiracles from the last casting of the larval skin of one of our common silk moths (*B. mori*), I remarked that parts of the trachea remained attached to them. To confirm this observation, I opened a number of cocoons of the ordinary silk worm, which chanced to be in my possession, and placing the shriveled cast skins found in them in potash water, left them for several days to soak and soften. I then succeeded in spreading them out sufficiently to exhibit, attached to each spiracle, a great bunch of tracheal vessels of varying sizes lying parallel, as though they had been drawn out through single openings in the body of the larva. While I cannot be sure that all the finer branches of this tracheal system were present in these bunches, the larger tubes certainly were, and the smaller may readily have been detached and lost in the processes of preparation or broken off and left as dead matter in the body. The fact is clear that in the shedding of the last larval skin at least the tracheal vessels remain attached and are removed with it. When we think of the trachea as portions of the ectoderm or outer layer or skin of the insect, this coincident removal seems only natural and to be expected; but the fact is none the less curious, nor its process more easy to comprehend. Are these vessels with all their ramifications withdrawn from the interior of the larva before the formation of the pupal skin with its spiracles and trachea? and if so, is there not a period during which the insect is without effective respiratory organs.

When the pupa changes into the imago, the same fact is observed. Here also the trachea, of much smaller proportions than in the former case, are found within the empty pupa skin. When does the imago as such begin to breathe with its own proper organs? When it bursts its mummy-like cerements and shakes out its new found wings in this fourth condition of its existence, is there a new birth in this respect also, that it begins at this moment to breathe in its higher life?¹—*Edward Potts.*

¹ This molting of the tracheæ has been noticed by me in the larva of the humblebees. See Proceedings Boston Soc. Nat. Hist., x, 283, 1866.—*A. S. P., Jr.*

TWO CHRYSALIDS IN THE SAME COCOON.—Another fact noticed in the examination of the cocoons just referred to surprised me. The first opened, a perforated one, contained two cast larval skins, an empty pupa case and a perfect pupa. Two others, also perforated, in this collection of seventeen, contained each two cast skins and two pupa cases. The situation was puzzling. One other cocoon, like the three former, of unusual size, remained perfect. I cut into it and found two cast larval skins and two perfect pupæ. I could come to no other conclusion than that in each of these four out of seventeen cases, *two worms* had worked together and in partnership spun the cocoons. The proportion in numbers of these abnormal instances is probably altogether fictitious, as the greater size may have invited their selection as specimens. Desirous to obtain some confirmation of this singular state of things, I inquired of a very intelligent Spanish gentleman formerly engaged in silk raising, and learned that while he could not remember having seen two worms actually engaged in forming the same cocoon, he had frequently observed two climbing simultaneously into the same twig and was very ready to believe that when once they had attached their threads to spin, neither would give way, and they thus became enveloped in the same toils. It was therefore his idea that it was rivalry in the search of a favorable location rather than any anticipatory sense of sexual attraction which had led them into these intimate relations. It is much to be hoped that the attention of other observers may during the coming season be directed to a further examination of the above facts, which, so far, I have been unable to find recorded.—*Edward Potts.*

NEW DEEP-SEA FISHES.—The researches conducted by the United States Fish Commission under the direction of Professor Baird, has resulted in the addition of a large number of species to the fauna of the eastern coast of our country. These have been mostly described by Messrs. G. B. Goode and T. H. Bean, whose full and careful diagnoses are valuable additions to ichthyology. At present we notice only those obtained at great depths, since these claim especial interest of the present time. The earliest of these discoveries was that of a new *Chimæra* from near the La Have Bank (Lat. 42° 40' N.), which was named by Professor Gill *C. plumbea*. The Arctic *Reinhardtius hippoglossoides* has been found at depths below 200 fathoms in the same latitude with the *Macrurus rupestris*. A new *Macrurus* from deep water off Cape Ann is called *M. bairdi*. New species of *Phycis* and *Haloporphyrus* also represent the *Anacanthini*. Several specimens of *Alepidosaurus ferox* have been taken off the same coast between lats. 41° and 44° at depths of from 200 to 400 fathoms.

The most important additions to deep-sea ichthyology ever made is the collection of the *Challenger* expedition, upon which a preliminary report was published about a year ago by Dr.

Günther: As with the American collections, no division receives greater accessions than the *Anacanthini*. Not less than six new genera of this group are described by Günther, four of which he places in the *Ophidiidae*. Ten species are added to the genus *Coryphænoides*. The *Scopelidae* prove to be equally characteristic of great depths, fifteen species and three genera being reported as new. Perhaps the most interesting novelties are five new species of *Alepocephalidae*, which belong to four genera, of which three are new. The total number of species described by Günther is sixty-one.

TO PREVENT GREASE FROM INJURING THE PLUMAGE OF BIRDS.—I have received the following letter which speaks for itself.—*ELIOTT Coues*.

CLINTON, CONN., April 12, 1879.

Dr. Coues:

Dear Sir:—In your Field Ornithology you speak somewhat despairingly of preventing the oil from injuring the plumage of fat birds, and I write to tell you of an experiment that I have tried, and which I believe is a success. A month since I put up a goosander whose skin was thick and very oily. Taking off the leaves of fat, my next thought was of how to prevent the saturation of the feathers, and I hit upon this experiment. Being a dentist and accustomed to the use of absorbents, I took a piece of spunk, of which I enclose a sample, cut it of an oval shape and large enough to reach pretty well up on the side of the tow body, pinned the edge smoothly to it, and as it is of a uniform thickness, it made a good surface for the skin to lie against.

This specimen has been in my laboratory all the time during these weeks, exposed night and day to the ordinary temperature of a house heated by a furnace, and shows not in the slightest degree any appearance of oil, while another specimen with a very similar skin is completely saturated beneath.

I take the liberty to write on this subject as it may lead to a satisfactory solution of the problem, how to keep the oil from soiling the plumage in fat birds.

Very truly yours,

A. H. STEVENS, Clinton, Conn.

ANOTHER SIREDON.—M. Velasco has recently published in the Memoirs of the Mexican Society of Natural History for 1878, a description of a species of *Amblystoma* and its metamorphoses, under the name of *Siredon tigrinus*, which is found in lake Santa Isabel, in the valley of Mexico. M. Velasco names the species as new, but we cannot perceive that it is different from the yellow-spotted varieties of the *Amblystoma mavortium* of Baird. The metamorphoses of Mexican specimens of this species have been observed by Duméril, and Sumichrast has sent specimens of the same from the elevated regions of Vera Cruz. M. Velasco gives

us the most southern locality yet known, and illustrates its characters with some very good figures. Will not some of the naturalists of Mexico give us an account of the metamorphoses of the *real Siredon*, the *S. mexicanus*, from the city of Mexico? No one has yet described it, if any there be.—*E. D. Cope*.

LOTA MACULOSA IN THE SUSQUEHANNA RIVER.—About twenty years ago Mr. J. M. M. Gernerd caught a specimen of this fish in a net at Muncy, Lycoming county, Penna. He preserved it in his collection and recently sent it to Philadelphia. It is about a foot long. Mr. Gernerd says that he has fished a great deal, but has never seen another specimen. It has not been previously recorded from the Susquehanna river.—*E. D. Cope*.

ANTHROPOLOGY.¹

ANTHROPOLOGICAL NEWS.—The paper following that of Dr. Topinard, in the *Bulletin* of the Société d'Anthropologie de Paris for 1878, pp. 66–92, is by Dr. Paul Broca, the distinguished anatomist, upon the indices of breadth in the scapula of man, the apes, and the series of mammals. Three tables of indices close the communication. To M. Broca, perhaps, more than to any other anatomist living or dead, we are indebted for the application of rigorous methods and instruments of precision to various parts of the skeleton, which are likely to yield precious results in deciding the exact place of man in nature.

On page 104, M. Gustave Le Bon discusses the inequality of the corresponding regions of the cranium. The measures were taken on 300 skulls from different series in the collection of the Anthropological museum. Long ago students inquired whether the two hemispheres of the brain was equal, and Bichat considered that a default of symmetry was accompanied by a lack of rectitude in judgment. The autopsy of that illustrious anatomist, whose skull was exceedingly irregular, shows what a poor foundation we have for such a theory. In man most of the organs are more developed on the right side than on the left; but taking into consideration that the left portion of the brain presides over the functions of the right side of the body, we might suppose, *a priori*, that it is the left hemisphere of the brain which should be the most developed. Upon the 287 skulls that I have measured, in taking for a starting point the vertical plane passing through the external occipital protuberance and the prolongation of the median suture of the nasal bone, the following results obtained :

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|--|-----|
| Skulls where the right side predominates..... | 125 |
| “ “ “ left “ “ | 111 |
| “ “ “ different bones are unequal, but whose inequalities are compensatory | 51 |

¹Edited by Prof. ORIS T. MASON, Columbian College, Washington, D. C.